

## 4 FCC §1.1307 (b)(1) & §2.1091 - RF Exposure

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

### Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
<b>Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

### 4.1 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

### 4.2 MPE Results

Maximum peak output power at antenna input terminal (dBm):	<u>29.507</u>
Maximum peak output power at antenna input terminal (mW):	<u>892.69</u>
Prediction distance (cm):	<u>25.0</u>
Prediction frequency (MHz):	<u>1615.65</u>
Maximum Antenna Gain, typical (dBi):	<u>4.5</u>
Maximum Antenna Gain (numeric):	<u>2.82</u>
Power density of prediction frequency at 25.0 cm (mW/cm <sup>2</sup> ):	<u>0.321</u>
MPE limit for uncontrolled exposure at prediction frequency (mW/cm <sup>2</sup> ):	<u>1.0</u>

### 4.3 Test Result

The power density of prediction frequency at 25 cm is 0.321 mW/cm<sup>2</sup> for the 4.5 dBi antenna which is compliant according to calculation under the MPE limit for uncontrolled exposure of 1.0 mW/cm<sup>2</sup>.